

A New Genus and Species from the Southwestern United States (Noctuidae: Acontiinae)

Richard M. Brown

323 Calvert Ct., Antioch, California 94509

Abstract. The species *albiciliata* Smith (1903) is removed from the genus *Cobubatha* Walker 1863, and made the type of a new genus, *Allerastria*. The genitalia of *albiciliata* are described, apparently for the first time. Three new taxa are described in the new genus, two subspecies of *albiciliata* (*paula*, from the San Joaquin Valley, California, and *chacoensis*, from the Chaco Canyon National Monument, New Mexico) and a new species (*annae* from southern California). All species and subspecies are figured and diagnosed.

Introduction

In 1977 I took a long series of *Cobubatha albiciliata* (Smith) at the western mouth of Titus Canyon, on the valley floor of Death Valley National Monument. Mixed with this series was a short series of moths that could not be assigned to *albiciliata* and is described as new. With the borrowing of additional material and the investigation of the other species of *Cobubatha* a number of characteristics were found that separated *albiciliata* and the new species from *Cobubatha*.

From the time *albiciliata* was described in 1903 by Smith, it has had uncertain placement. Smith (1903) stated "the species is not really an *Yrias*, but it resembles that genus in general form and may remain here until further material makes a better reference possible." Barnes and McDunnough (1912) in their description of the synonym *bifasciata* were not certain of the generic assignment when they placed "the species for the present in *Eustrotia*." McDunnough described *Nerastria* in 1937, and moved *albiciliata* to that genus in 1938. Most recently Franclemont and Todd, in R. W. Hodges *et al* (1983) placed *Nerastria* as a synonym of *Cobubatha* Walker (1863). Based on the characters described below, I feel that *albiciliata* and the new species should be assigned to a separate genus.

Allerastria R. M. Brown, new genus
Type species: *Yrias albiciliatus* Smith, 1903

Adult. Head with eyes of both sexes large, round, greater in diameter than width of front; front (fig. 2, 4) with a rounded projection, scaling giving front a squared appearance when viewed laterally; labial palpi upturned, second segment nearly straight, paralleling front, third segment short, conical to middle of eye; antennae serrate in both sexes, males with ventral setae much

longer than in female, nearly equal to diameter of antennal shaft; male antennae with 50-57 segments, female 48-53 segments. Thorax robust, fore tibia with epiphysis arising approximately one-third distance from basal end of tibia in both sexes; epiphysis shorter in females; metathoracic tibia of males slightly swollen with long hair scales on the inner surface forming a vestigial hair pencil, both pair of spurs present. Abdomen slender in males, more robust in females, extending beyond hind wings, abdomen without dorsal tufts.

Fore wings longer than wide, apex angulate, outer margin rounded; Sc free, ending seven-tenths from base; R_1 from discal cell; R_3 anastomosing with R_4 forming an accessory cell; R_2 from top of accessory cell; R_5 from apex of accessory cell; M_1 from bottom of accessory cell widely separated from M_2 and M_3 ; end of discal cell open; M_2 and M_3 from lower angle of discal cell, M_3 closer to M_2 than to CuA_1 ; CuA_2 arising from beyond middle of cell; 1A straight and free. Hind wing full and without angulation; Sc and R confluent for one-fourth of length of cell; R and M_1 separate from upper angle of cell; M_2 and M_3 from lower angle of cell, M_3 closer to CuA_1 than to M_2 ; M_3 and CuA_1 occasionally stalked; CuA_2 arising from middle of cell; cell open; 1A and 2A straight and free.

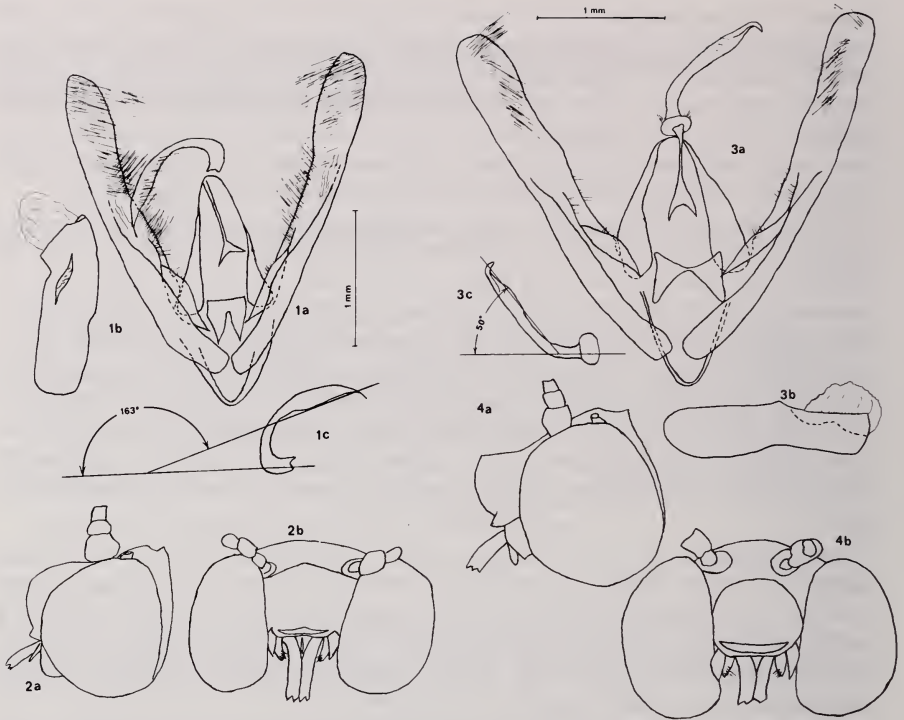
Male genitalia (fig. 1, 3). Valvae simple long, slender with parallel sides, length 6-7 times width; inner surface of valvae moderately setose; uncus long, tubular, down hooked, with lateral setae; scaphium long, slender, stalk with a widely bifurcated tip, area between tips roundly concave, scaphium length .55-.65 mm; juxta with basal margin deeply excavated; saccus, variable; aedeagus 1.0-1.3 mm long, .25-.33 mm wide.

Female genitalia (figs. 5, 6). Corpus bursae round to oval, membranous, without signum; ductus bursae membranous, short; ostium with sclerotized collar; posterior apophyses shorter than anterior apophyses, length 0.4-0.5 mm to 0.75-0.8 mm; ovipositor lobes well developed, 0.7-0.8 mm in length, densely covered with setae.

Diagnosis. The species of *Allerastria* can be separated from those of *Cobubatha* Walker (1863) by a number of characters. In both sexes of *Allerastria* the front is projecting greatly beyond the eyes, but less so than in the genus *Amiana* Dyar (1904). The third segment of the labial palpi in *Allerastria* are short and conical, slightly longer than their diameter, where as in *Cobubatha* the length of the third segment is at least twice the diameter. The male antenna has the ventral setae much longer than in *Cobubatha*. The species of *Allerastria*, similar in color and maculation, have the median areas of the fore wings predominantly cream-white and differ from much of the *Cobubatha* species which have a dark brown median band on the fore wing. The male genitalia of *Allerastria* have the valvae long, narrow with parallel sides, in *Cobubatha* these structures broaden toward the apex and are not quite so long.

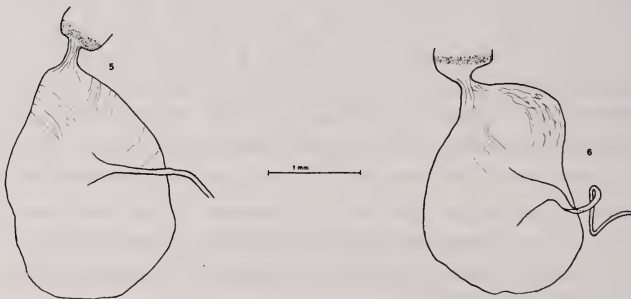
Distribution. *Allerastria* flies in the deserts of the southwestern United States, and the San Joaquin Valley, California. The majority of specimens used in this study are from southern California. The moths are on the wing from April through September.

Etymology. *Allerastria* is to read as another (*allos*) *erastria* and is feminine.



Figs. 1–2, Male genitalia. *Allerastria albiciliata*. 1a main body of genitalia; 1b aedeagus; 1c degrees of uncus downflex. 2a head, left lateral; 2b front.

Figs. 3–4, Male genitalia. *Allerastria annae*. 3a main body of genitalia; 3b aedeagus; 3c degrees of uncus downflex. 4a head, left lateral; 4b front.



Figs. 5–6, Female genitalia. Fig. 5 *Allerastria albiciliata*. Fig. 6 *A. annae*.



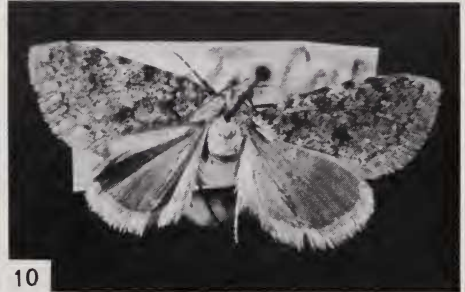
7



8



9



10



11



12



13



14

Fig. 7-14, Adults. Fig. 7 *Allerastria albiciliata albiciliata*, male. Fig. 8 *A. a. albiciliata*, female. Fig. 9 *A. a. paula*, male, Holotype. Fig. 10 *A. a. paula*, female, Allotype. Fig. 11 *A. a. chacoensis*, male, Holotype. Fig. 12 *A. a. chacoensis*, female, Allotype. Fig. 13 *A. annae*, male, Holotype. Fig. 14 *A. annae*, female, Allotype. Illustration 2 × natural size.

Key to Species,**BASED ON MACULATION**

- 1a) Underside wings prominently bicolored, basal half cream-white to white, distal half lead-gray to tan 2a.
- 1b) Underside wings not as in 1a, uniformly colored cream-white
 *annae* n. sp.
- 2a) Small, fore wing length 9.0–10.0 mm, heavily suffused with brown scaling, from the San Joaquin Valley (Tulare Co.), California *albiciliata paula* n. subsp.
- 2b) Larger, fore wing length 9.0–13.0 mm, from the southwestern (Arizona, Southern California, Nevada, and New Mexico) United States. Upperside fore wing white, tan or pink 3a.
- 3a) Upper fore wing (length 9.0–11.0 mm) may or may not have a pink flush. Upper fore wing crossed with basal sub-terminal lines lead-gray. Median area varies from white to pink. Southern California, western Arizona and Nevada
 *albiciliata albiciliata*.
- 3b) Upper fore wing (length 11.0–13.0 mm) cream-white to tan with light brown scales scattered over wing. In well marked specimens brown scaling forms indistinct cross lines. No lead-gray color or contrasting median area as in 3a. Northwest New Mexico
 *albiciliata chacoensis* n. subsp.

BASED ON MALE GENITALIA

- 1a) Uncus down flexed approximately 163° (fig. 1c) with heavy setae laterally arranged; juxta basal margin deeply excavated to near caudal margin (fig. 1a) *albiciliata*.
- 1b) Uncus down flexed approximately 50° (fig. 3c) with fine setae laterally arranged; juxta with basal margin deeply excavated to caudal margin (fig. 3a) *annae* n. sp.

BASED ON FEMALE GENITALIA

- 1a) Ductus bursae nearly twice as long as wide; corpus bursae regularly oval; ductus seminalis rapidly narrows to straight tube leading to the right *albiciliata*.
- 1b) Ductus bursae short, wider than long; corpus bursae irregularly round with right caudal quadrant roundly projecting, ductus seminalis broadly based and tapers to a spiraled tube leading to the right *annae*.

Allerastria albiciliata albiciliata (Smith) new combination
 (figs. 1, 2, 5, 7, 8)

Yrias albiciliatus Smith, 1903, Trans. Amer. Entomol. Soc. 29:215–216. (TL: Yuma Co., Arizona)

Eustrotia bifasciata Barnes & McDunnough, 1912, *Canad. Entomol.*, 44:218.
(TL: La Puerta Valley, San Diego Co., California)

Nerastria albiciliatus, McDunnough, 1938, Check list of Lepid. of Canada and U. S. Amer. Part 1, *Macrolepidoptera*, Mem. So. Calif. Acad. Sci., 108.

Cobubatha albiciliata, Franclemont & Todd, in R. W. Hodges *et al.*, 1983, Check List of the Lepidoptera of America North of Mexico, p. 132.

The description of *albiciliata* by John B. Smith and the description of *Eustrotia bifasciata* by Barnes and McDunnough are sufficient to make further descriptions of maculation unnecessary. However, the genitalia of either sex has not been described.

Male genitalia (fig. 1). Valvae long, narrow, with slight constriction midway between base and apex, costa with long setae, apex rounded and clothed with long setae, sacculus and median ridge with short setae; saccus tapering to a blunt point; uncus (fig. 1c) sharply down-flexed with apical half slightly swollen, terminating in a sharp spine, long prominent setae laterally arranged; scaphium with apex widely bifercated, slightly concave between tips, narrowing to a long thin shaft to point of attachment; juxta with sides incurved, basal margin deeply excavated nearly dividing juxta in two, caudal margin straight; aedaeagus (fig. 1b) robust, armed with flat, narrow chitinous structure.

Female genitalia (fig. 5). Corpus bursae oval, without signum or other structures; ductus bursae membranous; ostium with narrow, lightly chitinized band at caudal opening of ductus bursae; bursae seminalis arising ventrally from moderately broad base, narrowing rapidly to a straight tube; posterior apophyses 0.5 mm long, anterior apophyses 1.0 mm long; ovipositor lobes well developed and densely covered with setae.

Distribution. Arizona: Coconino Co.; Maricopa Co.; Pima Co.; Santa Cruz Co.; Yuma Co. California: Imperial Co.; Inyo Co.; Kern Co.; Mohave Co.; Riverside Co.; San Bernardino Co.; San Diego Co. Nevada: Clark Co.

Remarks. Two hundred forty seven specimens (78 males and 169 females), 6 genitalic and 3 wing slides have been studied.

***Allerastria albiciliata paula* R. M. Brown new subspecies** (figs. 9, 10)

Male. Head cream-white with scattered gray-tan scales; antennae tan and gray checked. Thorax ventrally cream, dorsally cream with scattered gray scales; prothoracic tibia gray with middorsal cream-white spots, scales over epiphysis cream-white; tarsi gray with cream-white at joints; mesothoracic leg with longest spur 2.5 times longer than shorter; tibia dorsally gray with tufted middorsal cream-white scales; tarsi gray with cream-white at joints; metathoracic leg with two pair of spurs, longest upper spur 2.0-2.5 times longer than shorter; tibia cream-white with very little gray; tarsi light gray, cream-white at joints. Abdomen ventrally cream-white, dorsally gray with cream-white bands. Fore wing above with basal area cream-white with heavy overlay of gray scales; t.a. line sinuous, tan with basal border heavy gray, distal border less defined by gray scales; median area light tan, median band represented by a gray square on costa; t. p. line light gray, lightly outlined by dark gray scales, with white scales on the veins; subterminal area light tan; fringe with spatulate scales of various length, concolorous with subterminal area; fore wing

below shiny with inner half cream-white, outer half gray-white. Hind wing above, shiny, with inner half cream-white, outer half gray; below marked as above but with more color contrast. Fore wing length 9.0–10.0 mm.

Female. Slightly larger than male, with maculation the same.

Genitalia. As in nominate subspecies.

Types. Holotype, male, California (Tulare County), Exeter, 7–VI-1924, (R. M. B. slide #309). Allotype, female, California, (Tulare County), Exeter, 15–VI-? (R. M. B. slide #324). Paratypes, 3 males, same locality as types, data as follows; 5–IX-1924, R. Dodge; 18–VII-1924, R. Dodge; 15–VI-1940, E. A. Dodge. The types and paratypes are in the collection of the California Academy of Sciences, San Francisco, California.

Distribution. This moth is known only from the type locality and is on the wing from June to early September.

Remarks. Five specimens (4 males and 1 female), 4 genitalic slides and 1 slide of the wings have been studied.

Subsequent to the photograph (fig. 10) of the allotype, an *Anthrenus* sp. (Coleoptera: Dermestidae) devoured the thorax leaving only the head, legs and wings. These parts have been attached to paper supports and are still useable for identification. The abdomen is mounted on a slide as noted above.

No difficulty should be encountered in recognizing this subspecies; *paula* is the smallest and darkest taxon in this genus. The heavy brown overlay gives this moth a distinctive appearance.

Etymology. I am calling this moth *paula* because of its small size. The name is feminine.

Allerastria albiciliata chacoensis R. M. Brown new subspecies (figs. 11, 12)

Male. Head cream-white with tan scales; antennae checked with tan; thorax cream-white, dorsally scattered with tan scales; prothoracic leg, tibia dorsally gray with cream-white band midlaterally, scales over epiphysis cream-white; tarsi gray with cream-white at joints; mesothoracic leg with longer spur 2.0 times longer than shorter spur; tibia dorsally scattered with gray scales, with middorsal cream-white tufted scales; tarsi gray with cream-white at joints; metathoracic leg with two pair spurs, longest spur 2.3–2.5 times longer than shorter spur; tibia cream-white with very little gray; tarsi dorsally gray with cream-white at joints; abdomen ventrally cream-white, dorsally with faint tan bands. Fore wing above, all lines weakly represented, ground color cream-white with mixture of light and dark tan scales; costa with seven variable dark-tan checks; basal and t. a. lines variably present; subterminal area with heaviest concentration of dark-tan scales; subterminal line present and scalloped. Fringe cream-white with long spatulate scales, dark-tan checks at end of veins. Fore wing below, shiny with inner half cream-white, outer half tan. Hind wing below marked as fore wing below. Fore wing length 11–13 mm (Holotype, 11 mm).

Female. Similar in size and color with maculation less distinct than in male.

Genitalia. As in nominate subspecies.

Types. Holotype, male, New Mexico, San Juan County, Chaco Canyon

National Monument, 2-VIII-1962, S. F. Wood. Allotype, female, New Mexico, San Juan County, Chaco Canyon National Monument, 3-VIII-1962, S. F. Wood, Paratypes, 3 males and 5 females. Same locality and collector as types, data as follows; 1♂ 8-VII-1962; 1♂ 1♀ 17-VII-1962; 1♂ 2♀ 2-VII-1962; 1♀ 3-VIII-1962; 1♀ 6-VIII-1962. The types and paratypes are in the collection of the Los Angeles County Museum of Natural History, Los Angeles, California.

Distribution. This moth is only known from the type locality. It is on the wing in July and August.

Remarks. Ten specimens (4 males and 6 females), and two genitalic slides have been examined.

This moth can be separated from the other subspecies by the general distribution of tan scales and extremely weak markings. The maculation of the fore wing is not divided into easily recognizable areas, although the tan scaling forms weak striations.

Entymology. I have named this moth after the Chaco Canyon National Monument to honor and point out the valuable role the national park system plays in preservation of the wildlife resource. For without this great system and the many dedicated people the rare and unusual would have been lost long ago.

Allerastria annae R. M. Brown new species

(Figs. 3, 4, 6, 13, 14)

Male. Head (fig. 4) dirty cream-white; labial palpi upturned to above middle of eye with scattered lead-gray scales; antennae, lead-gray with white checks. Thorax dirty white with light pink tinge; collar and tegulae with most pink; prothoracic leg cream-white, tarsus lead-gray with white at joints, epiphysis three-fourths fore tibial length; mesothoracic leg marked as prothoracic leg; metathoracic leg marked as previous legs. Above fore wing with basal space bicolored, inner area concolorous with thorax, outer lead-gray; costal area above discal cell with two diffused white spots; t. a. line sinuous, lead-gray, basally edged with a few white scales, distally by rust-red; t. p. line lead-gray, basally shaded red, distally with lighter gray, t. a. line begins on costa, crosses to vein CuA₁, accompanied by scattering of white scales forming a faint line, thence basad to median shade, turning then to inner margin; median area light gray-tan, divided in costal area by median shade. Subterminal line represented by white scales on veins, subterminal area tan with darker lunules at vein ends. Fringe gray. Hind wing ground color concolorous to thorax, distal half with light gray shading. Fringe concolorous with thorax. Wings below unmarked, concolorous with thorax. Fringe on fore wing slightly darker than on hind wing.

Female. similar to male in maculation, the markings less contrasting.

Male genitalia (fig. 3). Valvae long, narrow with parallel sides; apex rounded, heavily clothed with setae on distal half, basally naked except for a small cluster of setae on low median ridge; saccus base square and one-third saccal width; uncus (fig. 3c) tubular, long, pointed, down-flexed, short fine setae laterally arranged; scaphium with apex widely bifurcated, deeply concave, narrowing to a long narrow shaft; juxta bifid, deeply excavated basally and apically appearing as two triangular units narrowly united; aedaeagus (fig. 3b)

robust, less than combined length of tegumen and saccus, without internal armature or spicules, posterior end produced into a shelf-like projection, dorsal surface heavily chitinized with short stout setae. Length three times diameter.

Female genitalia (fig. 6). Corpus bursae irregularly oval with a membranous projection on right caudal quadrant; ductus bursae short and asymmetrically placed; ostium with narrow chitenized band separated from caudal opening of ductus bursae; ductus seminalis arising ventrally from a very broad base and narrows to a spiraling tube. Apophyses short, not reaching ostium; ovipositor lobes well developed and densely covered with setae.

Fore wing length in holotype, 13.5 mm; allotype 13.0 mm; paratypes, 12–13 mm.

Types. Holotype, male and Allotype, female, California, Inyo County, Death Valley National Monument, western mouth Titus Canyon, elevation 1000 ft. (305 M), 6–IV-1977, Richard M. and Paula J. Brown. The genitalia of the holotype is mounted on R. M. B. slide #302, and the allotype is on R. M. B. slide #318. Paratypes, 2 males, 7 females, same locality and data as holotype. California: Inyo County; 1♀ Furnace Creek Death Valley, 10–IV-1931, G. Willett; 1♀ Triangle Springs Death Valley, 11–12–IV-1942, G. Willett; 1♀ Mesquite Springs Death Valley, 19–22–IV-1943, G. Willett; Riverside County; 1♂ Palm Springs, 21–IV-1920; San Bernardino County; 1♀ Baldy Mesa, 9–IV-1932, J. A. Comstock; 1♀ near Barstow, 10–V-1940, C. Ingham; 1♂ Yermo, 28–VI-1938; 1♂ Yermo, ?-IV-1939. The National History Museum of Los Angeles County, California will receive eight paratypes, one pair of paratypes to the National Museum of Natural History, Washington, D.C. The balance of the type material will be in the collection of the California Academy of Sciences, San Francisco.

Distribution. The desert regions of southern California. As more specimens are taken, it probably will be found to fly sympatrically with *A. a. albiciliata*. On the wing from April through June.

Remarks. Twenty two specimens (6 males and 16 females) and 8 slides of the genitalia were studied. This is an extremely variable species in maculation. It varies from nearly immaculate individuals to those like the well marked holotype. The first color to be lost is the rust red, the lead-gray band then fades but never completely disappears. *Allerastria annae* is very close to *albiciliata* in maculation but lacks the sharp definition of pattern found in *albiciliata*. *Allerastria annae* also has much less contrast between the light and dark areas of the hind wing than is found in *albiciliata*.

The male genitalia of *annae* can be told from those of *albiciliata* by the uncus being down flexed approximately 50° (fig. 3c). In *albiciliata* the scaphium has a long shaft with parallel sides, whereas in *annae* the sides gradually diverge to a widely bifurcated apex. Also *annae* can be separated from *albiciliata* by the deep basal excavation of the juxta found in *annae* which gives an appearance of two triangular units loosely united.

Etymology. This moth is named after my wife, Ann, who has given so much in support and understanding. The name is feminine.

Acknowledgments. Special thanks to Robert W. Poole, National Museum of Natural History, for reviewing my specimens and the original manuscript, his confirmation of my conclusions and critical comments are greatly appreciated. I

am also indebted to Julian P. Donahue, National History Museum of Los Angeles, and to Paul H. Arnaud, Jr., The California Academy of Sciences, for without their generous loans of specimens this paper would have been much less comprehensive. Thanks to my wife, Ann, who produced the photographs used in this paper, and also to two anonymous reviewers who caused a great deal of work.

Literature Cited

- BARNES, WM. & J. MCDUNNOUGH 1912. New Noctuid Species. Canadian Entomol. 44:216–218.
- DYAR, HARRISON G. 1904. Additions to the List of North American Lepidoptera, No. 2. Proc. Entomol. Soc. Wash. 6:103–117. (Orig. descrip of *Amiana* on p. 104)
- FRANCLEMONT, JOHN G. & E. L. TODD IN RONALD W. HODGES, ET AL. 1983. Check List of the Lepidoptera of America North of Mexico, p. 132.
- MCDUNNOUGH, J. 1937. Notes on North American Noctuid Genera. Canad. Entomol. 69:40–47, 58–66. (Orig. descrip. of *Nerastria* on p. 65.)
- 1938. Check List of the Lepidoptera of Canada and the United States of America, Part 1, Macrolepidoptera. Mem. So. Calif. Acad. Sci., 1:108.
- SMITH, JOHN B. 1903. New Noctuids for 1903, No. 4, with notes on certain described species. Trans. Amer. Entomol. Soc. 29:191–224, Plate III.